

### **REMARKS**

Claims 1-24 are currently pending. Claim 25 was previously cancelled. Claim 1 is currently amended.

#### **Examiner Interview**

Applicants would like to thank Examiner Bowers for the telephonic interview of October 22, 2007. The Examiner agreed that the additional limitation of the channels being formed as through-holes in the top member in amended claim 1 would overcome the currently pending rejections.

#### **Claim Rejections - 35 U.S.C. 103**

Claims 1, 9 and 10 stand rejected under 35 U.S.C. 103(a) as being allegedly obvious over U.S. Patent 5,744,366 to Kricka ("Kricka") in view of U.S. Patent 6,251,343 to Dubrow ("Dubrow"). Claim 1 recites *removably* sealing a top member to the smooth upper surface of the support member with substantially fluid tight, *conformal contact* to create a discrete assay chamber, and at least one channel if formed as a *through-hole* in the top member.

Kricka fails to disclose all the limitations of claim 1. Kricka discloses a solid substrate (14) having a flow channel (20) formed in the top surface of the substrate (14), as shown in Figure 1. The channels in Kricka are not formed as through-holes, as the "cover to the substrate...closes the channel" (col 3, line 62). Additionally, Kricka's cover (12) is clamped or otherwise bonded to the substrate (14) (col 13, lines 45-47). Thus, Kricka's cover is not configured to be removably sealed, but rather is permanently sealed. Additionally, Kricka does not disclose any kind of conformal contact between the substrate and the cover. As described in the instant specification, conformal contact means "substantially form-fitting contact" (see page 11). The cover of Kricka is simply placed on top of the substrate and permanently bonded, and therefore does not "conform".

Dubrow fails to cure the deficiencies of Kricka. Dubrow shows a microfluidic device with a lower layer (110) and an upper layer (102). The lower layer has a plurality of grooves and wells (114) on the surface that form the channels in Dubrow, and the channels are explicitly enclosed below the cover layer so the channels are formed within the interior of the device (col 3, lines 28-32). Thus the channels are not formed as through-holes in the top member.

Additionally, the Examiner references Fig. 1 to suggest the upper layer (102) and lower layer (110) are in form-fitting conformal contact. However, there is no disclosure of form-fitting conformal contact; rather Dubrow's device includes small high spots (214) to prevent the two layers from fully touching, to allow adhesive to flow in between (col 10, lines 22-29). Similar to Kricka, the two layers are placed on top of each other and permanently bonded with adhesive bonding, UV or solvent welding, thermal bonding, or a mechanical clamps. If mechanical clamps are used, as shown in Fig. 3B, a gasket (314) is provided between the upper and lower layers, and thus there is not "form-fitting conformal contact" as defined in the present specification.

Kricka and Dubrow, alone or together, do not disclose all of the limitations of claim 1. For at least these reasons, Applicants submit that claim 1 (and all claims that depend therefrom) are not obvious over Kricka and Dubrow and Applicants respectfully request withdrawal of this rejection.

Claims 1, 2, 9-11, 17, 18, 22 and 24 stand rejected under 35 U.S.C. 103(a) as being allegedly obvious over U.S. Patent 6,238,874 to Jarnigan ("Jarnigan") in view of Dubrow. Jarnigan describes a channel region in Fig. 5B, which is relied upon for the Examiner's rejection. Although Jarnigan discloses a base member (8) and a top cover (10) in Fig. 1, the configuration of a support member and a top member is not contemplated by Jarnigan for the embodiment of Fig. 5B and there is no motivation or suggestion to add such a support member and top member to the embodiment depicted in Fig. 5B. In other words, Jarnigan's embodiment of Fig. 1 cannot be combined with the embodiment of Fig. 5B. Fig. 1 shows a structure with one unitary lumen (14) and two inlet holes (24, 26) and thus is distinct from two wells with a channel therebetween, as recited in claim 1. Since the embodiment of Fig. 1 does not disclose any channel, it also cannot disclose a channel that is formed as a through-hole in the top member.

Furthermore, Jarnigan does not disclose "conformal contact" between the top member and the support member as recited in claim 1. Specifically, claim 1 recites that the top member of the device is mounted to the support member by being placed in "substantially fluid-tight conformal contact" with the support member. As described in the specification, conformal contact means "substantially form-fitting contact" (see page 11). Jarnigan describes a capillary constructed of two parts: 1) a base member having a narrow ridge (12) along the uppermost

surface of the base member and 2) a cover plate. Rather than the cover plate being in conformal contact with the base member, the cover plate is sealed to the top surface of the ridge (see col. 5, lines 28-30). Therefore, the cover plate does not have form-fitting contact with the base member and only contacts the top surface of the ridge of the base member. As discussed above, Dubrow also fails to disclose conformal contact between the top and bottom layer. For at least these reasons, Applicants submit that claim 1 (and all claims that depend therefrom) are not obvious over Jarnigan and Dubrow and respectfully request withdrawal of this rejection.

Claims 3-5 stand rejected under 35 U.S.C. 103(a) as being allegedly rendered obvious by Kricka or Jarnigan in view of Dubrow and U.S. Patent 5,284,753 to Goodwin, Jr. ("Goodwin"). Neither Kricka or Jarnigan, alone or in combination with Dubrow, teach all of the limitations of claim 1, as discussed above. Furthermore, Goodwin Jr. does not cure these deficiencies. Goodwin Jr. describes chemotaxis test sites with top and bottom regions separated by a membrane filter, and thus does not describe a support member with a removably sealable top member, or channels formed as through-holes in the top member as claimed. For at least these reasons, Applicants submit that claims 3-5 are not rendered obvious by the combination of Kricka or Jarnigan, and Dubrow and Goodwin, Jr. and Applicants request withdrawal of this rejection.

Claims 3-5, 12, 13 and 19-23 stand rejected under 35 U.S.C. 103(a) as being allegedly rendered obvious by Jarnigan and Dubrow in view of Kennedy "Motility and chemotaxis..." and/or Shonnard "Hydrodynamic effects...". Jarnigan and Dubrow do not teach all of the limitations of claim 1, as discussed above. Kennedy and/or Shonnard do not cure these deficiencies, since they do not describe a support member with a removably sealable top member as claimed. Shonnard describes chemotaxis experiments using a known Palleroni chamber and Kennedy uses small test tubes for his experiments. For at least these reasons, Applicants submit that claims 3-5, 12, 13 and 19-23 are not rendered obvious by the combination of Jarnigan, Dubrow, and Kennedy and/or Shonnard and Applicants request withdrawal of this rejection.

Claims 3 and 6-8 stand rejected under 35 U.S.C. 103(a) as being allegedly rendered obvious by Kricka or Jarnigan, and in further view of Dubrow and U.S. Patent 6,705,357 to Jeon

("Jeon"). As discussed above, Kricka or Jarnigan and Dubrow, alone or in combination, do not disclose all of the limitations of claim 1 and Jeon cannot cure this deficiency. Jeon does not describe a support member with a removably sealable top member, where the channel region is exposed to the environment as claimed. Jeon describes a base member (silicon wafer 200) with a cover member (PDMS replica 210), as shown in Figs. 5 and 6. The channels (fluid network 240) are clearly formed within the device, and thus are not formed as through-holes in the top member, as recited by claim 1. For at least these reasons, Applicants submit that claims 3 and 6-8 are not rendered obvious by the combination of Kricka or Jarnigan, Dubrow, and Jeon, and Applicants request withdrawal of this rejection.

Claims 14-16 stand rejected under 35 U.S.C. 103(a) as being allegedly rendered obvious by Jarnigan in view of Dubrow and Kricka. As discussed above, Kricka, Jarnigan and Dubrow, alone or in combination, do not disclose all of the limitations of claim 1. For at least these reasons, Applicants submit that claims 14-16, which depend from claim 1, either directly or indirectly, are not rendered obvious by the combination of Jarnigan, Dubrow and Kricka, and Applicants request withdrawal of this rejection.

### **Double Patenting**

Claims 1, 2, and 25 are rejected on the ground of nonstatutory obviousness-type double patenting over claims 1-3 of U.S. Patent 6,811,968. Claims 1 and 25 are rejected on the ground of nonstatutory obviousness-type double patenting over claims 1, 2, 5-7 and 11 of U.S. Patent 6,818,403. Claims 1, 2 and 25 are rejected on the ground of nonstatutory obviousness-type double patenting over claims 1-3, 17 and 18 of U.S. Patent 6,982,171. Since claim 25 was previously cancelled, the rejection of this claim is moot. Applicants request that these rejections of claims 1 and 2 be held in abeyance until an indication of allowable subject matter has been made.

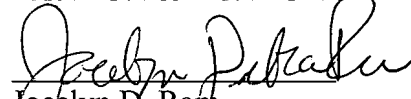
**CONCLUSION**

It is respectfully submitted that the present application is now in condition for allowance, which action is respectfully requested. The Examiner is invited to contact Applicants' representative to discuss any issue that would expedite allowance of the subject application.

Any fees for extension(s) of time or additional fees required in connection with the filing of this response, are hereby petitioned under 37 C.F.R. § 1.136(a), and the Commissioner is authorized to charge any such required fees or to credit any overpayment to Kenyon & Kenyon's Deposit Account No. 11-0600.

Dated: 11/2/07

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CONCLUSION

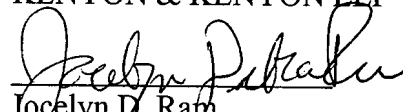
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